

# MVX 44 VGA A

## 4x4 VGA and Stereo Audio Matrix Switcher

### Key Features

- Ultra-wideband performance - 350 MHz to 500 MHz (-3 dB), depending on model
- Triple Action Switching™ for RGB delay
- Audio input gain and attenuation
- Switchable audio output levels
- Optional IR 501 handheld remote control



Model	Version Description	Part #
MVX 44 VGA A	4x4 VGA and Stereo Audio	60-635-21

### DESCRIPTION

The MVX 44 VGA A is designed to route high resolution computer-video and stereo audio signals. Convenient 15-pin HD connectors are used for all computer-video input and output connections. Unbalanced stereo audio is input on 3.5 mm stereo mini jacks, while balanced or unbalanced stereo audio is output on captive screw connectors. Using pre-terminated cable assemblies, such as Extron's VGA with Audio Cables, eliminates crimping and makes installations faster and easier.

In addition, the MVX 44 VGA A comes standard with the QS-FPC™ - QuickSwitch Front Panel Controller, which allows for touch-of-a-button input and output selection directly from the front panel. It can also be controlled through RS-232 serial control utilizing Extron's SIS™ - Simple Instruction Set commands, the optional Extron IR 501 remote control, the optional Extron MKP 2000 or MKP 3000 X-Y remote control panels, or via a third party control system.

### Features

- **Inputs: VGA on female 15-pin HD connectors; audio on 3.5 mm stereo mini jacks**
- **Outputs: Video on female 15-pin HD connectors; audio on captive screw connectors**
- **Ultra-wideband performance - 350 MHz to 500 MHz (-3 dB), depending on model** — MVX Series models in I/O sizes from 4x4 to 12x8 provide a minimum of 350 MHz (-3 dB) RGB video bandwidth, fully loaded. Larger sizes, from 12x12 to 16x16, provide a minimum of 500 MHz (-3 dB) at full performance capability, when one input drives all outputs.
- **Triple Action Switching™ for RGB delay** — RGB delay blanks the screen when the matrix switcher switches to a new source. The new sync signals precede the RGB signals, so there is no glitch during the transition.
- **Switches both balanced and unbalanced stereo audio** — Output on captive screw connectors.
- **Audio input gain and attenuation** — Allows users to set the level of gain or attenuation for each audio input channel, eliminating noticeable volume differences when switching between sources.
- **Switchable audio output levels** — Output levels can be switched between +4 dBu professional and -10 dBV consumer levels, allowing a mix of professional and consumer-level audio equipment.
- **Optional IR 501 handheld remote control**
- **Audio breakaway** — Provides the capability to break an audio signal away from its corresponding video signal, allowing the audio and video signals from one source to be switched to different destinations.
- **View I/O mode** — Easily view which inputs and outputs are actively connected.
- **QS-FPC™ - QuickSwitch Front Panel Controller** — Provides a discrete button for each input and output, allowing for simple, intuitive operation.
- **Global presets** — Frequently-used I/O configurations may be saved and recalled from the front panel or via serial control. This time-saving feature allows you to set up I/O configurations and store them in memory for future use.
- **Front panel security lockout** — Prevents unauthorized use when the matrix switcher is installed in an unsecured environment where easy access is not desirable. In lock-out mode, a special button combination is required to operate the front panel.
- **RS-232 control port** — Using RS-232 serial commands, the MVX Series can be controlled and configured via the Extron Windows®-based control program, or integrated into a control system. Extron products use the SIS - Simple

Instruction Set command protocol, a set of basic ASCII code commands that allow for quick and easy programming. The serial port also makes it easy to install firmware updates.

- **Control software** — Provides a graphical, drag-and-drop interface for I/O configuration and other customization functions via RS-232 remote control. This software also offers an emulation mode for configuration of an offsite matrix switcher; the I/O configuration may be saved for future downloading to the matrix switcher.
- **Optional control panels and keypads** — Optional X/Y control panels, bus control panels, and keypads provide the flexibility to control an MVX Series matrix switcher from a remote location.
- **1U, rack-mountable metal enclosure**
- **Internal universal power supply** — The 100-240 VAC, 50/60 Hz, international power supply provides worldwide power compatibility.

## OPTIONAL ACCESSORIES

- SYM BNCF

15-pin HD Male to BNC Female Mini High Resolution Cables

## SPECIFICATIONS

### MVX VGA A Series

#### Video

##### Routing

MVX 44 VGA A	4 x 4 matrix
MVX 48 VGA A	4 x 8 matrix
MVX 84 VGA A	8 x 4 matrix
MVX 88 VGA A	8 x 8 matrix
MVX 128 VGA A	12 x 8 matrix
MVX 1212 VGA A	12 x 12 matrix
MVX 168 VGA A	16 x 8 matrix
MVX 1616 VGA A	16 x 16 matrix

##### Gain

Unity

##### Bandwidth

44-128 models	350 MHz (-3 dB), fully loaded
1212-1616 models	500 MHz (-3 dB), fully loaded
0 - 10 MHz	No more than +0.14 dB to -0.1 dB
0 - 130 MHz	No more than +0.95 dB to -0.8 dB

##### Crosstalk

44-88 models	< -60 dB nominal @ 10 MHz, < -39 dB @ 100 MHz
128 model	-80 dB @ 1 MHz, -55 dB @ 10 MHz, -37 dB @ 100 MHz
1212/168/1616 Series	-90 dB @ 1 MHz, 78 dB @ 5 MHz, -70 dB @ 10 MHz, -60dB @ 30 MHz, -52 dB @ 100 MHz

##### Switching speed

44-88 models	20 ms (max.)
128-1616 models	200 ns (max.)

#### Video input

##### Number/signal type

VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video (bi-level and tri-level sync), S-video, composite video

44/48 models	4
84/88 models	8
128/1212 models	12
168/1616 models	16

##### Connectors

44/48 models	4 female 15-pin HD
84/88 models	8 female 15-pin HD
128/1212 Series	12 female 15-pin HD
168/1616 Series	16 female 15-pin HD

##### Nominal level

1 Vp-p for Y of component video and S-video, and for composite video  
0.7 Vp-p for RGB and for R-Y and B-Y of component video  
0.3 Vp-p for C of S-video

##### Minimum/maximum levels

44-128 models	Analog: 0.3 V to 2.0 Vp-p with no offset at unity gain
1212-1616 models	Analog: 0.5 V to 2.0 Vp-p with no offset

##### Impedance

75 ohms

##### Horizontal frequency

15 kHz to 145 kHz

##### Vertical frequency

30 Hz to 170 Hz

##### Return loss

< -40 dB @ 5 MHz

##### DC offset (max. allowable)

44-128 models	1.5 V
1212-1616 models	±1.4 mV

## Video output

Number/signal type	VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video (bi-level and tri-level sync), S-video, composite video
44/84 models	4
48/88/128/168 models	8
1212 model	12
1616 model	16
Connectors	
44/84 models	4 female 15-pin HD
48/88/128/168 models	8 female 15-pin HD
1212 model	12 female 15-pin HD
1616 model	16 female 15-pin HD
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels	
44-128 models	0.3 V to 2.0 Vp-p (follows input)
1212-1616 models	0 V to 2.0 Vp-p (follows input)
Impedance	75 ohms
Return loss	< -40 dB @ 5 MHz
DC offset (max. allowable)	
44-88 models	<20 mV with input at 0 offset
128 model	±5 mV with input at 0 offset
1212-1616 models	±10 mV with input at 0 offset
Switching type	Triple-Action™

## Sync

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB, RsGsBs (follows input)
Standards	Computer scan rates and also NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0.5 V to 5.0 Vp-p
Output level	AGC to TTL: 4.0 V to 5.0 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	
44-128 models	75 ohms
1212-1616 models	Inputs 1 to 8: 75 or 50 ohms, switchable Inputs 9 to 12 or 16: 75 ohms
Max. propagation delay	
44-88 models	Horizontal: 90 ns nominal Vertical: 160 ns nominal
128 model	30 ns nominal
1212-1616 models	<120 ns
Max. rise/fall time	
44-128 models	4 ns
1212-1616 models	11.5 ns
Polarity	Positive or negative (follows input)

## Audio

Routing	
MVX 44 VGA A	4 x 4 stereo matrix
MVX 48 VGA A	4 x 8 stereo matrix
MVX 84 VGA A	8 x 4 stereo matrix
MVX 88 VGA A	8 x 8 stereo matrix
MVX 128 VGA A	12 x 8 stereo matrix
MVX 1212 VGA A	12 x 12 stereo matrix
MVX 168 VGA A	16 x 8 stereo matrix
MVX 1616 VGA A	16 x 16 stereo matrix

Gain	
44-88 models	Adjustable

**NOTE** At default (when input gain is set to 0 dB and output level is set to "Pro"), overall gain is 12 dB for balanced output. The gain range is -6 dB to +22 dB for balanced output when the output level is set to "Pro".

128-1616 models	Unbalanced output: -6 dB Balanced output: 0 dB
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Frequency response

44-128 models	20 Hz to 20 kHz, $\pm 0.2$ dB
1212-1616 models	20 Hz to 20 kHz, $\pm 0.05$ dB
THD + Noise	
44-128 models	0.05% @ 1 kHz, 0.3 % @ 20 kHz at nominal level
1212-1616 models	0.03% @ 1 kHz at nominal level
S/N	
44-128 models	>90 dB, balanced, at maximum output (unweighted)
1212-1616 models	>100 dB, balanced, at maximum output (21 dBu) (unweighted)
Crosstalk	
44-128 models	< -65 dB @ 20 kHz, < -80 dB @ 1 kHz (fully loaded) or below 60 Hz
1212-1616 models	< -90 dB @ 1 kHz, fully loaded
Stereo channel separation	
44-128 models	>80 dB @ 1 kHz, >55 dB @ 20 Hz to 20 kHz (average for range)
1212-1616 models	>103 dB @ 1 kHz
CMRR	
44-128 models	>75 dB @ 20 Hz to 20 kHz
1212-1616 models	>85 dB @ 20 Hz to 20 kHz

## Audio input

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Number/signal type	
44/48 models	4 stereo, unbalanced
84/88 models	8 stereo, unbalanced
128/1212 models	12 stereo, balanced/unbalanced
168/1616 models	16 stereo, balanced/unbalanced
Connectors	
44/48 models	4 female 3.5 mm stereo mini jacks: tip (L), ring (R), sleeve (GND)
84/88 models	8 female 3.5 mm stereo mini jacks: tip (L), ring (R), sleeve (GND)
128/1212 models	(12) 3.5 mm captive screw connectors, 5 pole
168/1616 models	(16) 3.5 mm captive screw connectors, 5 pole
Impedance	
44-88 models	>18k ohms unbalanced, DC coupled
128-1616 models	>10k ohms unbalanced/balanced, DC coupled
Nominal level	
44-88 models	-10 dBV (316 mV) (default)
	Also compatible with +4 dBu (1.23 V), 0 dBu (0.775V), -20 dBV (100 mV)
128-1616 models	-10 dBV (316 mVrms), 0 dBu (775 mV)
Maximum level	
44-88 models	>+12 dBV (4 V), (unbalanced) at 1% THD+N
128-1616 models	+19.5 dBu, (balanced or unbalanced) at 0.01% THD+N
Input gain	
44-88 models	-18 dB to +10 dB, default = 0 dB
	Adjustable per input.

**NOTE** This is referenced to the internal bus signal level. It can be verified by measuring the unbalanced output when the output level is set to "Consumer".

128-1616 models	-18 dB to +24 dB (default = 0 dB)
	Adjustable per input by RS-232/422 or front panel

**NOTE** 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV  $\approx$  2 dBu

## Audio output

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Output gain	44-128 models only: 0 dB unbalanced (consumer) or +12 dB balanced (pro), selectable Default = +12 dB, balanced, when output level is set to "Pro"
Number/signal type	
44/84 models	4 stereo, balanced/unbalanced
88/128/168 models	8 stereo, balanced/unbalanced
1212 model	12 stereo, balanced/unbalanced
1616 model	16 stereo, balanced/unbalanced
Connectors	
44/84 models	(4) 3.5 mm captive screw connectors, 5 pole
48/88/128/168 models	(8) 3.5 mm captive screw connectors, 5 pole
1212 model	(12) 3.5 mm captive screw connectors, 5 pole
1616 model	(16) 3.5 mm captive screw connectors, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	$\pm 0.1$ dB channel to channel
Nominal level (output volume range)	
44-88 models	+4 dBu (1.23 V) (default) balanced, or -10 dBV (316 mV) unbalanced

128-1616 models	0 to 64 (-75.8 dB to 0 dB) Adjustable in 1 dB increments from steps 1 to 64, 12 dB increment from step 0 to 1; default = 64 = 0 dB
Maximum level (Hi-Z)	
44-88 models	>+22 dBu, balanced; >+14 dBV, unbalanced at 1% THD+N
128-1616 models	>+21 dBu, balanced or unbalanced, at 0.1% THD+N
Maximum level (600 ohm)	
44-88 models	>+20 dBu, balanced; >+12 dBV unbalanced at 1% THD+N at default settings
128-1616 models	>+15 dBm, balanced or unbalanced, at 0.1% THD+N at default settings

## Control/remote — switcher

Serial control port	
44-88 models	1 RS-232, 9-pin female D connector
128 model	1 RS-232 or RS-422, female 9-pin D connector
1212-1616 models	1 bidirectional RS-232 or RS-422, rear panel female 9-pin D connector 1 bidirectional RS-232, front panel 2.5 mm mini stereo jack
Baud rate and protocol	
44-88 models	9600 baud, 8 data bits, 1 stop bit, no parity
128-1616 models	9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity
Control pin configurations	
44-88 models	2 = TX, 3 = RX, 5 = GND, 9 = hardwired IR input
128 model	
RS-232	2 = TX, 3 = RX, 5 = GND
RS-422	2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+
1212-1616 models	
RS-232	9-pin female D connector: 2 = TX, 3 = RX, 5 = GND Mini stereo jack: tip = TX, ring = RX, sleeve = GND
RS-422	9-pin female D connector: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+
IR controller module	
44-88 models	IR 501 (optional)
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™)

## General

Power	100 VAC to 240 VAC, 50-60 Hz, internal
44-128 models	30 watts
1212-1616 models	48 watts
Temperature/humidity	
44-128 models	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
1212-1616 models	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +113 °F (0 to +45 °C) / 10% to 90%, noncondensing
Cooling	
44-88 models	Convection, vents on sides and top
128-1616 models	Convection, vents on right and left sides
Mounting	
44-128 models	
Rack mount	Yes, with included mounting kit
Furniture mount	Yes, with optional under-desk mounting kit
1212-1616 models	
Rack mount	Yes
Enclosure type	
Enclosure dimensions	
44-88 models	1.75" H x 17.4" W x 8.5" D (1U high, full rack wide) (4.4 cm H x 44.2 cm W x 21.6 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
128 model	3.5" H x 17.0" W x 9.4" D (2U high, full rack wide) (8.9 cm H x 43.2 cm W x 23.9 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
1212-1616 models	5.25" H x 17.0" W x 9.4" D (3U high, full rack wide) (13.3. cm H x 43.2. cm W x 23.9. cm D) (Depth excludes connectors. Width excludes rack ears.)
Product weight	
44-88 models	7.0 lbs (3.2 kg)
128 model	9.4 lbs (4.3 kg)
1212-1616 models	14.4 lbs (6.5 kg)
Shipping weight	
44-88 models	10 lbs (5 kg)

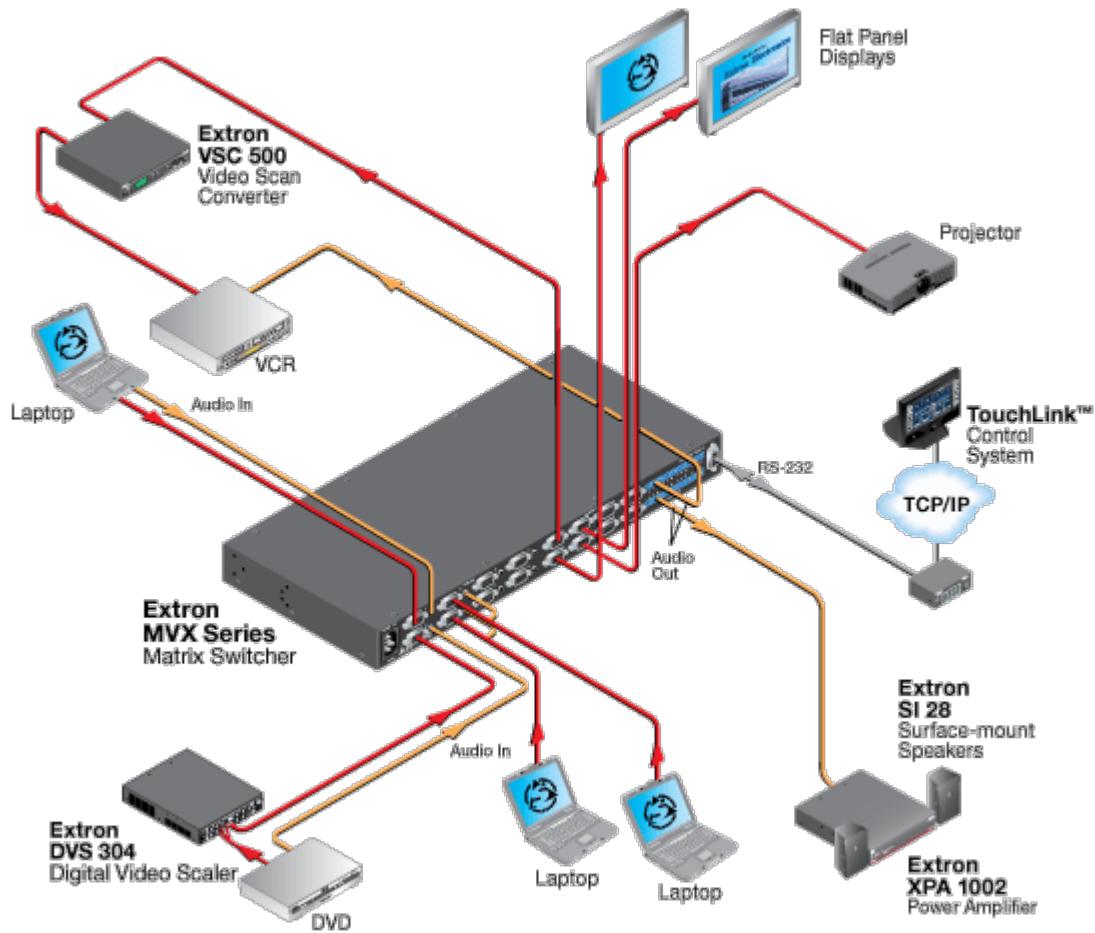
128 model	15 lbs (7 kg)
1212-1616 models	21 lbs (10 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

**NOTE** All nominal levels are at  $\pm 10\%$ .

**NOTE** Specifications are subject to change without notice.

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## DIAGRAM



## PANEL DRAWING

